by any very considerable time, although from the obstruction to respiration for several days before this event, circumstances were favourable to their early production.

Abdomen.—Considerable serum flowed from peritoneal sac; stomach and intestines distended to their utmost capacity. Liver exhibited several tubercles, the size of a pea, beneath the serous covering and numerous small ones in its parenchyma.

ART. XI.—*On letting Blood from the Jugular in the Diseases of Children.* By CHAS. C. HILDRETH, M. D., Zanesville, Ohio.

BELIEVING that the letting of blood from the external jugular is too much neglected by most medical men, we have thought that a few observations upon the subject might not be without interest.

Our best authorities agree in advising the use of leeches in the acute inflammations of infancy. But leeches cannot always be had. In fact their use is almost exclusively confined to our cities and larger towns; and hence the great majority of our practitioners are obliged to let blood by other means. My object here is to show the great advantage of selecting the external jugular from which to draw blood in diseases of young children, instead of the veins of the arm or temporal artery.

I would make this operation the rule instead of the exception, in many of the acute affections of children *under two or three years of age;* and also in older subjects, in certain diseases of the brain and trachea. As the head in infancy is larger in proportion to the size of the body than in the adult, so also is the cerebral vascular system more developed, and hence we find the jugulars relatively larger and more prominent in the first years of life. But in what, let us inquire, consists the advantage of opening the jugular, in the diseases of children, over the more general operation of venesection in the arm? In the first place let me endeavour to prove, that this operation is practically more simple, safer, and also more efficacious in the arrest of certain acute diseases. It is more simple, inasmuch as the external jugular in a child, is at least double the size of the veins of the arm, and consequently much more easily found and opened. It is more simple, on account of the more rapid flow of blood from this vein; and also in dispensing with a part of the usual apparatus for bleeding in the arm.

How often is the practitioner vexed and annoyed, in his search after a vein in the arm of a fleshy child? And how often is he still more annoyed in obtaining from it the requisite amount of blood to control the inflammation? These difficulties are very seldom found in letting blood from the jugular. Again, it is the safer operation. True, the opening of any external vein is safe enough, provided we open the vein alone, and not the accompanying artery. But in this lies the danger; and many a child has been lost from neglect of venesection at the proper moment, simply because the practitioner finds an artery so very near the vein, that from fear of wounding the former, he abandons the attempt at bleeding entirely. To such a case the operation upon the jugular is peculiarly applicable. Here, there is no artery nearer than the carotid, endangered; and this lies too deep to be ever touched by skilful hands.

But then again it has been objected, that in operations upon the jugular there is danger of sudden death from admission of air. This objection we conceive to be purely imaginary, if the operation be properly performed. It is true that in extirpation of tumours low down in the neck, where the jugulars have been *completely cut across** and from the presence of hardened tissue could not collapse, air has been drawn into their open orifices in expanding the chest, and death has followed almost instantly. Again, in operating upon the cicatrix of a burn in the neck, the danger from admission of air is very urgent, simply because the firm tissue through which the vein passes, will effectually prevent its open orifice from collapsing by atmospheric pressure. So far as I am aware, however, there is no case on record of death from admission of air resulting from *simple puncture* of the *external jugular in venesection.* Nor do I believe such a result possible in a healthy state of the parts, if the operation be properly performed. To render the measure perfectly safe, let the pressure be applied at the point where the vein passes the first rib; let the vein be opened midway between the clavicle and angle of the jaw, and let the compress be applied to the orifice before the pressure is taken off the vein below.

The safety of the operation may be inferred from the fact, that the jugular is almost invariably selected in letting blood from the lower animals; and although the operation is often done in the most unskilful manner, yet injurious consequences very seldom follow.

In simple inflammations, the danger of phlebitis need not be taken into the account, in this or other operations on veins; but in typhoid, or malignant disease, the jugular, from its size and position, had better be avoided. In such cases, however, general bleeding is seldom required.

Again, I have said that letting blood from the jugular proves more efficacious in the arrest of certain acute diseases of children, than loss of blood from the arm. Among these diseases we may mention, inflammation of the larynx and trachea; inflammation of the membranes and substance of the brain; and congestion of the cerebral organs, accompanying or preceding convulsions.

Here blood is taken so nearly from the seat of disease, that the operation appears to have the effect of topical and general depletion combined, and hence its prompt and very decided salutary influence.

We also much prefer letting blood from the jugular in the acute inflam-

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[* In many of the fatal cases recorded from the entrance of air into the veins, these vessels were merely opened and not completely cut across. See *American Cyclopedia of Pract. Med. and Surg.*, vol. i. p. 263., et seq.—Editor.]

mations of the thoracic viscera in young children. One of the chief advantages of the operation is the great rapidity with which blood flows from a free orifice in this vein. A decided impression can thus be made upon the system in a very few moments, and *with much less loss of blood than would be required to produce the same effect* from a vein in the arm, or by the still slower process of leeching or cupping.

Letting blood from the jugular, although a very simple operation, is not (to me at least) very satisfactorily described in the books. There is too much apparatus, too great a parade of compresses and bandages, &c., considering the trifling character of the operation. The subsequent dressing of the orifice is also objectionable. It is essentially necessary in letting blood from the jugular of a refractory child, that *the head and chest should be fixed immovably*, otherwise the flow of blood will be interrupted or stopped entirely. The following method I have found to answer this indication effectually, and also to be very convenient in practice.

The nurse having exposed the right shoulder of the child, and secured the clothing from the flow of blood, seats herself upon a low chair, and in holding the child across her knees, carefully confines the arms. The surgeon, seated at her side, receives and secures the child's head between his knees. With the thumb of the left hand, he now compresses the jugular where it crosses the first rib; while the remaining part of the same hand is employed in fixing the chest of the child against the person of the nurse. The right hand of the operator being at liberty, he makes a free opening into the vein with whatever form of lancet he is accustomed to use. The blood is received in a cup, the edge of which applied a little below the orifice, likewise serves to compress the vein. From a robust child blood escapes with astonishing rapidity, particularly when the child cries or struggles. No effort should therefore be made to quiet the patient. His cries should rather be encouraged, as they expedite very much the operation. A sufficient quantity of blood is very soon lost, to produce the constitutional effect required. The colour of the lips and cheeks of the child will tell the surgeon when syncope approaches, much more certainly than will his finger upon the pulse. The quantity of blood desired having been lost, a compress is applied to the orifice, and the pressure taken off the vein below. After the child becomes quiet, the compress is removed, and the wound closed by a piece of court or adhesive plaster, which the physician should always carry with him for the purpose. This is much the best dressing. The bandage and compress usually advised is very objectionable. It not only obstructs the free return of blood from the head, but its presence irritates the patient, and if not well adjusted may promote the flow of blood or interfere with respiration. If, however, all pressure be removed from the vein below, blood will not escape if no dressing be applied, except the child cry or struggle. We therefore much prefer, if the *proper dressing* be not convenient, to leave the orifice uncovered, and direct the nurse to apply the compress for a moment, should blood escape during the cries of the child. Here perhaps it may be asked at how early an age is general depletion justifiable in a child? To this we would reply that the age of the patient should not be taken into the account, but simply the violence and location of the inflammation. A few leeches are equivalent to general depletion in very young subjects; and, in inflammations of mucous membranes in general, and abdominal viscera in particular, are no doubt much to be preferred to the use of the lancet. But in open, clearly marked, acute inflammations of the brain and membranes, lungs and pleura and trachea, accompanied by high fever, we much prefer the bold and rapid abstraction of blood from the jugular, whatever may be the age of the child. And we are well convinced that less blood will be required to produce a given effect in these diseases, if taken from this vein, than if drawn by leeches, whether the child be a few weeks old, or a few months.

At this tender age we may also remark that the jugular is the only vein of *sufficient size* from which we can draw blood with certainty or safety, and for this reason, if for no other, should be selected.

But perhaps we have already said too much in regard to so simple an operation. Simple, however, as it is, we have found it one of Herculean power in the arrest of inflammation. And simple as it is, we fear that many a child has been sacrificed to a neglect of its performance. We have known reputable practitioners, who have grown gray in the practice, who have never touched the jugular with a lancet.

Perhaps the great majority of the physicians of this country, if foiled in getting blood from the arm of a child, will look no further for a vein, but at once abandon the attempt to bleed. But when loss of blood is urgently demanded I need not say what a disgraceful loss of life is the result of the omission.

Should what I have written in regard to the simplicity, safety, and peculiar advantages of this operation, be the means of inducing some of my professional brethren to practice it more frequently, the object of this paper will have been accomplished. A few cases in illustration and I have done.

CASE I.—*Of cerebral congestion accompanied by convulsions.*—A child of M. D., two years of age, took varicella in April 1845. The eruption was profuse and accompanied by an unusual amount of fever. No treatment, however, was had until April 20th, when the child was found in convulsions. On my arrival, I learned that the fit had continued for nearly an hour. From the intensity of the fever, the strong determination of blood to the head, state of the pulse, &c., I saw that free depletion was very urgently demanded to preserve the delicate structure of the brain from lesion. A warm bath being in readiness, the child was placed in it, and the right external jugular opened immediately. The child being robust and the orifice large, blood escaped very rapidly. It was suffered to flow into the bath without regard to quantity, until the lips and cheeks of the child became deadly pale, and perspiration started from the surface. The compress was then applied to the orifice; the pressure taken from the vein below; the child removed from the bath, and placed in a horizontal position. The surface of the neck was then cleansed from blood, and a bit of court plaster applied to the wound in the vein.

When the child became faint from the loss of blood, the convulsive action ceased, but it still remained comatose. As reaction came on, the cold dash was applied to the head followed by cloths dipped in ice water.

The coma still continuing, the lower bowels were unloaded by stimulating injections, and large sinapisms applied to the abdomen and lower extremities.

When the mustard produced the desired effect, the child became sufficiently conscious to swallow.

Calomel and castor oil were then given, and in a few hours the bowels were effectually purged.

The child had no more convulsions, but was next day walking about the house, though languid and exhausted.

That free blood-letting was most imperatively demanded in this case I have not a doubt, yet in a subsequent examination of the veins of this child's arm, I found them so small and indistinct, and so deeply imbedded in adeps, that it would have been almost impossible to have obtained from them the requisite amount of blood.

In all cases of croup demanding it, we invariably select the jugular from which to take blood. This vessel is so near the seat of this disease that letting blood from it, appears to have all the advantages of local and general depletion combined. We have space for one case only in illustration.

CASE II.—*Croup.*—A child of Mr. B., six months old, took croup Oct. 5th, 1846. Residing some miles in the country, the mother took upon herself the management of the case for the first twenty-four hours. During this time the disease was making rapid progress; some emetic medicine had been given, but it had not induced vomiting. On my arrival, I found the child had high fever; hoarse harsh cough; almost entire loss of voice, and very great difficulty of respiration. As the case had been too long neglected, I deemed it necessary at once to make as strong an impression as possible upon the disease. An emetic of calomel, ipecac. and antimony was first given, and then the right external jugular opened freely. The pain of the operation, restraint, &c., caused the child to make efforts to cry; from loss of voice, however, but little sound was heard. These effects, as usual, induced a very rapid flow of blood from the vein. No attempt was therefore made to quiet the patient. When the lips and cheeks became pale, and syncope approached, the compress was applied, the bleeding arrested, and the mother directed to compose the patient. This was now readily done. The usual dressing was then applied to the orifice. In a very few moments the emetic operated freely, and I had the pleasure of hearing a loose tracheal rale attend the next effort to cough. The child continued languid and exhausted for several hours. The happy impression upon the disease which had been so promptly effected was maintained by an occasional emetic and other remedies, and from this time the child continued distinctly convalescent. As the after treatment contains nothing of interest, it is not necessary to detail it; suffice it to say, the child soon recovered its usual health.

CASE III.—*Acute Hydrocephalus.*—Feb. 11th, 1845, was summoned to see a child of Mr. G. R., four months old. The mother informs me that her child has had an eruption upon the scalp for some time past, but that it entirely disappeared about a week since, under the use of some local application.

Since the drying up of the eruption, the child has been very restless, has had general fever, thirst, disturbed sleep, much rolling of the head upon the pillow, and frequent paroxysms of screaming. Immediately before I was sent for, the patient had a slight convulsion. On examining the head, I found the signs of dropsical effusion distinctly marked; the fontanels enlarged; sutures partially separate; the carotids throbbing violently; the whole head very hot, and evidently increased in size. Fearing a return of the convulsions, if the brain was not promptly relieved, I made a free orifice into the right external jugular immediately. As the child was crying at the moment, blood escaped as rapidly as from the arm of an adult. It was suffered to flow without regard to quantity, until the lips and cheeks of the child became perfectly blanched. A compress was then applied, the pressure taken off the vein below, and the usual dressing afterwards employed. Five or six ounces of blood were lost, and the child continued faint for some time after the bleeding. Scarce any reaction followed, and from this time forth the child was distinctly convalescent. Not a symptom of any violence occurred during the subsequent treatment. Other remedies were of course not neglected. The head was kept cool; a blister applied to the back of the neck; calomel and other purgatives were given at intervals, and as soon as possible an eruption of tartar emetic brought out on the scalp. Especial care was taken to maintain this eruption for several weeks after apparent recovery, in order to guard against a relapse.

That copious blood-letting was most imperatively demanded in this case, I think no practical man will deny. Yet if I had attempted to obtain the same amount of blood from the arm, or temporal artery of a child of four months, I should have been almost certainly disappointed. Leeches at that time were not to be had, nor could their application have produced so prompt an impression upon the disease.

ZANESVILLE, *January 1st*, 1847.